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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicant: Steven Don Arnold

Serial No. 10/647,046

Filed: March 5, 2003

For: Low Speed Turbo EGR

Group Art Unit: 3748

Examiner: Thai Ba Trieu

REPLY BRIEF FOR APPELLANT UNDER 37 CFR § 41.41

In response to the Examiner's Answer in the captioned patent application, Appellants respectfully submit this Reply Brief.

In the Examiner's Answer, the Examiner restated his reasons for the rejections of the present claims. However, in neither the prior office actions nor the Examiner's Answer has the Examiner responded to the substance of two of Appellant's arguments, which arguments are

restated herein for convenience. Although these arguments are restated here as pertaining to only one of the rejections, they are also applicable to the other rejections as discussed in Appellant's Appeal Brief.

Following the restatement of arguments, Appellant also includes a response to the argument made by the Examiner in Section (10)(2), on page 15, of the Examiner's Answer.

Restatement of Arguments

With respect to, for example, the rejection of claims 16-17 and 19 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,062,026 to Woollenweber et al. in view of U.S. Patent No. 5,771,868 to Khair.

(i) Claims 16-17

According to MPEP Section 2143.01, if the combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). The EGR gas of Khair must be brought down to ambient pressure to be combined with the fresh inlet air via valve **35** (see FIG. 1, col. 4 lines 39-43, and col. 5, lines 25-27). The *mixture* is then compressed by compressor **22**. In contrast, Woollenweber et al. teach that ambient air is first compressed by compressor **18** *before* being combined with the cooled EGR in mixing valve **35**. Thus in each case the pressure of the exhaust gas is different when it is mixed with the fresh intake air. Because Khair teaches mixing the exhaust gas with the inlet air *before* the inlet air is compressed, combining the system of Khair with that of

Woollenweber et al., both of which teach that the inlet air is mixed with the exhaust gas *after* it is compressed, would change the principle of operation of each reference. Thus the references may not properly be combined.

Further, on page 9 of the Final Office Action dated August 3, 2005, the Examiner stated that “it is the examiner’s position that the positioning of the diesel particulate filter before the intercooler in the above claimed positions would have been obvious to one having ordinary skill in the art. More specifically, one having ordinary skill in the art would have positioned the diesel particulate filter at any position in the EGR system in order that the exhaust gas needs to be cleaned/filtered before being delivered back to the engine.” In this statement the Examiner relies upon what he considers “common knowledge in the art”. However, this statement is inaccurate, and inappropriate under MPEP 2144.03(A) due to the lack of documentary evidence presented.

As remarked by Applicant in the office action response filed on January 14, 2005, “the inventor has discovered that it is advantageous to filter the exhaust before it is cooled, because the filter efficiency is dramatically increased at higher temperature. This is especially important in the context of the present invention, since the EGR particulate level must be very low in order to avoid damage to the rotating compressor wheel.” There is no suggestion whatsoever in Khair, which is the only cited reference that discloses a filter disposed before the EGR cooler, that the position of the filter is important. Indeed, as clearly shown in the figures, the filter 29 of Khair and filter 41 of Woollenweber et al. are *optional*; there is no understanding of the importance of filter efficiency or compressor damage as discovered by the present inventor. While not cited in the present rejection, Gladden et al. is yet another example of the level of knowledge in the art at

the time the present invention was made. Gladden et al. do not disclose a filter at all; they use fluid wash injector 84, positioned well after the cooler (indeed, positioned even after the EGR stream is mixed with intake air), to lessen fouling of downstream components. Finally, Coleman (not cited in this rejection) does not disclose a filter or the need for any filtration at all.

Applicant therefore submits that Examiner's statement above is not considered to be common knowledge or well-known in the art. Thus, according to MPEP Sections 2144.03(B) and (C), the Examiner must present adequate documentary evidence supporting the Examiner's statement, which the Examiner has not done.

For these reasons, Applicant submits that claims 16-17 are allowable over the cited references.

Response to the argument made by the Examiner in Section (10)(2), on page 15, of the Examiner's Answer.


In the Examiner's Answer, the Examiner states that Woollenweber and Khair disclose a two-stage compressor including a first stage compressor (23) and a second stage compressor (18). Appellant respectfully disagrees. Both references disclose two separate turbochargers, each with a single stage compressor. It is well known in the art that two separate single stage compressors are not the same as, or equivalent to, a two stage compressor (which is typically part of a single turbocharger).

Conclusion

Appellant therefore respectfully requests that the rejections of all pending claims be reversed.

Dated this 21st day of July, 2006.

Respectfully submitted,

By 
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